

## STUDY CASE N° 5: GAMMAGRAPHY INCIDENTS IN SPAIN

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### □ Case N° 5a

In 1993 a radiographer was working with a remote exposure device containing 1.6 Tbq of iridium-192. After the operation, he retracted the source, but he proved with his survey meter that the source really was not retracted. The analysis of the accident showed that the male connector end of the crank was broken. That piece had been changed some days before the operations by the manufacturer and the new one had a manufacturing defect.

In summary, the accident happened due to incorrect manufacture and quality control of a very important safety piece of the device. Regulatory authorities inspected the manufacturer and required corrective actions. The radiographer had communicated the accident to his radiation safety officer and they correctly carried out the emergency plan to recover the source. Nobody received significant doses (0.5 mSv whole body dose).

### □ Case N° 5b

In 1994 a radiographer was working at night with an exposure device containing 0.8 Tbq of iridium-192 and had difficulties when trying to lock it in the safe position. He saw his electronic dosimeter off-scale, but his survey meter was malfunctioning and did not detect radiation. He struck the lock assembly with a hammer to reach the lock position. Then he left the exposure device in the client's facility without any supervision and went to his office to get another survey meter. He returned to the operation site and started to work again, but he had the same problems with the lock assembly. Moreover, his electronic dosimeter was off-scale again and the new survey meter neither worked correctly. He returned to his facility again, took a new survey meter and decided to leave there his TLD and went back to continue the operations.

In summary, the survey meters did not work correctly and the radiographer did not verify them previously. Although he detected a failure on the device he continued working and did not communicate the problems to his radiation safety officer and did not use his TLD. Anyway the TLD showed a dose of 8.5 mSv.

### □ Case N°5c

In 1995 an individual without qualification was ordered by his company to do radiographs at night with an iridium-192 source of 1.9 Tbq. During the operations this person was not able to retract the source into the safe position. Recognising that a problem existed he tried unsuccessfully to contact the radiation safety officer of the facility. Finally, he contacted personnel of the competent authority and the accident was solved without radiological consequences. The analysis of the accident showed that the operator did not know the emergency plan arrangements.

In summary, although this person was not qualified or well trained, fortunately he did recognise the problem and took appropriate actions and therefore avoided to receive an overexposure (the operator received a whole body dose of 2.11 mSv). The company acted imprudently in having an untrained person perform radiography.

## ❑ **Lessons learned**

In order to diminish the occurrence of this kind of incidents, the CSN led a campaign with the following features:

- Review the operational and radiation protection procedures of all gammagraphy companies and require some significant modifications,
- Press the radiation protection responsible for an appropriate control of the procedures performance by operators,
- Insist that training is the cornerstone for the excellence in this type of work, as many others,
- But, in some cases, the need for sanctions was inevitable.